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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,148	04/26/2006	Tadashi Dojo	02910.103293.1	3336

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EXAMINER	
VAJDA, PETER L	

ART UNIT	PAPER NUMBER
1795	

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07/09/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,148	DOJO ET AL.	
	Examiner	Art Unit	
	PETER L. VAJDA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _07 April 2010_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-7_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-7_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _26 April 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The applicant's response filed 04/07/2010 has been received and considered. As a result, the applicant's arguments regarding the 35 USC 112, second paragraph, rejection are found to be persuasive and that rejection is withdrawn. All other rejections are maintained and this action is made final. A complete response to the applicant's arguments is provided below. Claims 1-7 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-341598 (equivalent to Matsunaga *et al.* US PGP 2003/0044708) in view of Sawada *et al.* (US PGP 2003/0039909) and considered with JP 06-118700.

Matsunaga *et al*. is a US equivalent document of JP 2002-341598 and will be cited in this rejection for clarity. Matsunaga teaches a toner comprising a binder resin, a colorant, a wax, and an inorganic fine powder (Abstract). Said toner also comprises a magnetic material having an average particle size of from 0.1 to 0.5 micrometers and a saturated magnetization of 10-200 Am^2/kg in a magnetic field of 796 kA/m (p. 7 [0095]). Said magnetic material is taught to show a good affinity with a binder resin, improve the

dispersion of a charge control agent, and is well dispersed in the binder resin resulting in improved uniformity and stability of chargeability in the toner (p. 7 [0092]). Additionally, Matsunaga teaches that the toners have from 55 to 95% by number of particles having a circularity of 0.950 or more (p. 8 [0098]). If the number of particles having this circularity is outside the stated range the toner is liable to suffer from charging failure (p. 8 [0100]). Furthermore, in order to ensure uniform chargeability, the toner is taught to have a particle diameter of from 4 to 12 micrometers (p. 8 [0101]). Matsunaga teaches a mixture of high and low molecular weight binder resins in the toners disclosed in the inventive examples. Both polyester and vinyl binder resins are prepared having low and high molecular weights. Production example 6 discloses a vinyl monomer (VL-2) having a molecular weight of 6400 (p. 17 [0253]) and production example 12 discloses a binder resin (B-2) comprising 75 parts by weight of VL-2 and 25 parts by weight of high molecular weight vinyl polymer VH-2 (p. 17 [0261]). Example 21 discloses a toner (21) comprised of 105 wt. parts of binder resin B-2 out of a total of 198 total wt. parts (p. 17 [0265] and p. 18 [0281]). Therefore, 38% of toner (21) is the low molecular weight polymer (75 pt. Weight/198 pt. Weight = .38 x 100% = 38%). Furthermore, the two polymers that comprise binder resin B-2 are resins VL-2 and VH-2. VL-2 has a glass transition temperature of 60 C (p. 17 [0253]) and VH-2 has a glass transition temperature of 57 C (p. 17 [0257]) and therefore the two polymers have different softening points.

Matsunaga teaches that the toner have a dielectric loss tangent in the range of .025 to .08 in a temperature range of 100 to 130 °C. This is outside the range recited in

pending claim 3 of the present application. Furthermore, Matsunaga does not teach that the dielectric loss tangent have the relationship of the applicant's formula (1) in pending claim 1. JP 06-118700 (henceforth JP ‘700) teaches a magnetic toner comprising a binder resin ([0014]), a colorant ([0017]), and a magnetic material ([0022]). JP ‘700 teaches that as a toner is heated to and beyond it’s glass transition temperature, the peak dielectric loss tangent will coincide with the glass transition temperature of the toner. Drawing 1 of JP '700 shows that the shape of the peak is symmetrical. Therefore, since the glass transition temperature (Tg) represents the maximum point of a symmetrical peak, it is clear that the toners of JP '700 behave according to the applicant's formula (1) since tandelta values are approximately equal at -10 and +10 degrees from the maximum point (Tg). This relationship can also be extended to the toner of Matsunaga as JP '700 teaches this as a general trend and not a phenomena specific to the toners described in JP '700. Furthermore, JP ‘700 teaches that a peak value of tandelta in a pyrosphere (the temperature range about the glass transition temperature) tandelta is usually in the range of 0.02 to 0.04 while at an ordinary temperature of 0-25 °C tandelta of a toner is usually in the range of 0.001 to 0.01 ([0009-10]). Thus as temperature increases, so does tandelta. Examining drawing 1 of JP '700 clearly shows that tandelta starts off at a baseline value below 0 °C and increases with temperature until a maximum tandelta value is reached about the glass transition temperature. Tandelta then decreases at temperatures above the glass transition temperature before finally ramping up rapidly at temperatures above 100 °C. Matsunaga measured the tandelta values of their toners in this high temperature region

of between 100 and 130 °C (Abstract). The glass transition temperatures of polymers used for the binder resin are all in the range of 57-62 °C and the glass transition temperature of the sulfur containing resin is taught to preferably be from 75 to 95 °C ([0039]) and embodiments are disclosed with Tg's ranging from 27-133 °C ([0223-0241]). Therefore the glass transition temperature of the toners would be expected to be approximately in the 65-75 °C range and could be shifted depending on the sulfur containing resin incorporated in the toner. This glass transition temperature range corresponds to the general range of a typical pyrosphere taught to be 50-75 °C by JP '700 ([0009]). The toners of Matsunaga would therefore behave in the manner depicted in the graph of drawing 1 of JP '700. From drawing 1, it can be seen that as the glass transition temperature of a toner is increased, the graph is shifted horizontally (to the right) and therefore tandelta (post shift) will be lower at temperatures approaching the glass transition temperatures and higher at temperatures above the glass transition temperature. From this, it is clear that the toners of Matsunaga would have lower tandelta values at 40 °C than at the 100-130 °C at which they were measured. Furthermore, since the glass transition temperatures of the toner vary depending on the Tg of the sulfur containing resin, it is clear that the toners of Matsunaga inherently have tandelta values within the applicants range of .002 to .01. Matsunaga *et al*., however, do not teach a true specific gravity for their toners.

Sawada *et al*. teach a toner comprising metal materials and possessing a specific gravity in the range of 1.35 to approximately 1.6 g/cm3 (p. 3 [0028]). Sawada further teaches that by using a toner with a specific gravity within this range the toner

can be easily captured in a pulverizing and classifying method resulting in a superior manufacturing method (p. 3 [0028]). Additionally, with toners having a specific gravity below said range manufacture becomes problematic resulting in poor charging and charge stability (p. 3 [0029]). When the specific gravity is above said range, the required weight of the toner necessary for forming a good quality image becomes large and the cost of the toner increases. Additionally, resin concentration becomes lower and the fixing ability of the toner suffers causing the toner to detach from the fixed image (p. 3 [0030]).

Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have created the toner particles of Matsunaga *et al*. to have a specific gravity within the range of 1.35 to about 1.6 g/cm3 as taught by Sawada *et al*. This would have resulted in improved toner manufacturing procedures as well as enhanced fixing properties and lowered production costs. Manufacturing the toner of Matsunaga *et al*. with a specific gravity within this range could be easily achieved by adjusting the specific gravity of the metal material used as magnetic additives.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-341598 (equivalent to Matsunaga *et al.* US PGP 2003-044708) in view of Sawada *et al.* (US PGP 2003/0039909) and considered with JP 06-118700 as applied to claims 1-4 and 6-7 above, and further in view of Ohtani *et al*. (US Patent 4789613).

The complete discussions of Matsunaga *et al*., Sawada *et al*. and JP ‘700 above are included here. None of these inventors, however, specifically teach that the toner have a dielectric constant of from 15 to 40 pF/m.

Ohtani *et al*. teach toner comprising a binder resin, a charge control additive, a colorant, and a highly dielectric material having a dielectric constant of at least 10 (Abstract). According to Ohtani, the material having a dielectric constant of at least 10 acts as a capacitor to promote the frictional charge of the toner surface and allows improved retention of the charge on the surface of the toner (Col. 3 ln. 49-54). Furthermore, this effect is not diminished by an increase in humidity prevents charge leakage even if some of the conductive dispersant remains on the toner surface. These properties result in excellent developability and transferability without any sacrifice in image quality (Col. 3 ln. 54-60).

Therefore, it would have been obvious to any person of ordinary skill in the art at the time of the invention to have created the toner particles of Matsunaga *et al*. to have a specific gravity within the range of 1.35 to about 1.6 g/cm3 as taught by Sawada *et al*. and to have adjusted the dielectric constant by adding the dielectric material of Ohtani. This would have resulted in a toner that had improved charge retention, improved stability in high humidity environments and excellent developability and transferability without any sacrifice in image quality. Furthermore, these improvements would have improved toner manufacturing procedures as well as enhanced fixing properties and lowered production costs.

Response to Arguments

Applicant's arguments filed 04/07/2010 have been fully considered but they are not persuasive. The applicant argues that JP ‘700 neither discloses nor suggests a measurement of a peak value of tanσ of the magnetic toner at a frequency of 100 kHz. The applicant argues that in embodiments, JP ‘700 teaches that the tanσ is measured at 10 kHz and not 100 kHz. However, JP ‘700 teaches that measurements are performed at frequencies of 1 to 100 kHz ([0006]) and therefore the teachings of JP ‘700 are understood to be applicable at measurements within that range of frequencies. The applicant further argues that JP ‘700 does not teach that the use of dispersed magnetic bodies in the disclosed embodiments, however, again JP ‘700 teaches that magnetic colorants made from ferrites and other iron oxides may be used in an amount of from 2 to 20 parts per 100 parts of the resin. Therefore, again it is understood that the symmetrical nature of the tandelta vs. temperature graph described by JP ‘700 is applicable to toners comprising said magnetic bodies. According to the MPEP, a reference is relevant for all that it teaches. *In re Heck*, 216 USPQ 1038, 1039 (Fed. Cir. 1983). "[I]n a section 103 inquiry, 'the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.'" Merck & Co. Inc. v. Biocraft Laboratories Inc., 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) (quoting In re Lamberti, 192 USPQ 278, 280 (CCPA 1976)). Therefore, since JP ‘700 teaches the use of magnetic bodies in their toner particles, one of ordinary skill in the art certainly would have recognized the applicability of the teachings of JP ‘700 to the teachings of Matsunaga. The applicant

continues and argues that in the case of a magnetic toner, the dielectric loss tangent is greatly affected by polarization of a magnetic material in the toner and therefore the bilateral symmetry shown at the nexus of the glass transition temperature of drawing 1 of JP ‘700 is not observed. However, the applicant is reminded that the arguments of counsel cannot take the place of fact. Since the teaching of JP ‘700 is at odds with the counsels assertion that the bilateral symmetry about the glass transition temperature will not be observed for magnetic toners the applicant must provide evidence to support this argument. Again, JP '700 teaches the use of magnetic colorants but says nothing about complication arising from their use or that the shape of the tan delta vs. temperature curve is in any way altered.

Regarding the Matsunaga reference, the applicant argues that a toner comprising a small amount of a magnetic body having a low true specific gravity does not inherently provide a desired dispersed state. However, the applicant is reminded that Matsunaga teaches that the magnetic material used in the toners "can be formed in a narrow particle size distribution and is well dispersed in the binder resin, to result in a toner having improved uniformity and stability of chargeability." Therefore, Matsunaga not only teaches amounts of magnetic material in the applicant's critical range, but also appreciates the criticality of achieving a uniform dispersion of said magnetic material. Furthermore, the applicant asserts that in Matsunaga the magnetic material is generally present in amounts up to 200 parts per 100 parts binder and that the saturation magnetism is typically up to 200 Am^2/ka. Here, the applicant is representing the teachings of Matsunaga by reciting only the highest value in the ranges taught by

Matsunaga. Regarding the amount of magnetic material, Matsunaga teaches a range of from 20 to 200 per 100 parts binder and regarding the saturation magnetism Matsunaga teaches a range of 10-200 Am^2/kg.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER L. VAJDA whose telephone number is (571)272-7150. The examiner can normally be reached on 7:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1795

/PLV/ 06/25/2010